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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/068,392

11/13/2001

Ioannis Pavlidis

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11/14/2002

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EXAMINER

DEJESUS, LYDIA M

ART UNIT

PAPER NUMBER

2859

DATE MAILED: 11/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/008,392

Examiner

Lydia M. De Jesús

Applicant(s)

PAVLIDIS, IOANNIS

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-13,15-23,25-30,32-36 and 38-40 is/are rejected.
- 7) ☒ Claim(s) 3,14,24,31 and 37 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 and 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements filed on September 20, 2002 and October 21, 2002 have been placed of record and the references cited therein have been considered by the examiner with the exception of the following non-patent references cited in the information disclosure statement of October 21, 2002: "The Master of Disguise" by Mendez and "Remote Sensing, Principles and Interpretation" by Sabins. These references have not been considered by the examiner because the disclosure statement fails to set forth the relevant pages that relate to the present application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4-10, 12, 13, 15-21, 23 and 25-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Anbar.

Anbar discloses a system for use in detecting deception of a person (see lines 44-52 of column 4), the system comprising: a thermal infrared imaging device operable to provide data of at least a region of a face of a person (see lines 11-13 of column 10); and a computing apparatus operable upon the thermal image data to transform the thermal image data to blood flow rate data

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i.e., HST (see lines 37-62 of column 3), for use in determining whether the person is deceptive or non-deceptive (see line 8 of column 10 through line 14 of column 12).

With respect to claim 13: Said computer apparatus is further operable to classify the person as deceptive or non-deceptive based on a change of blood flow rate over time in the at least one region of the face (see steps 6 and 9-11 of the method stated from line 8 of column 10 through line 14 of column 12).

With respect to claims 15 and 16: Said thermal infrared image device is operable to provide thermal image data of more than one region of the face of the person, including at least a region proximate an eye of the person (see lines 43-56 of column 10).

With respect to claims 17 and 18: Said thermal infrared image device is operable to capture thermal image data during at least a period of time during at least an elicited response from the person (see lines 17-26 of column 10) and the computing apparatus is operable to determine whether a person is deceptive or non-deceptive based on the blood flow rate data corresponding to the thermal image data captured during at least the elicited response and the computer apparatus is further operable to track movement of at least the region of the face of the person during the period of time (see steps 2-4 of the process described from line 8 of column 10 through line 14 of column 12).

The system disclosed by Anbar further comprises means for providing measurement of one or more physiological parameters different than blood flow rate obtained using thermal image data, in this case blinking rate, frequency of heartbeat and temperature, and the computing apparatus is operable to determine whether the person is deceptive or non-deceptive based on the blood flow rate data i.e., HST, obtained using thermal image data and the one or more

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physiological parameters (see steps 13-15 described from line 47 of column 11 to line 8 of column 12).

With respect to claim 21: the computing apparatus is further operable to make a preliminary determinations of whether the person is deceptive or non-deceptive based on one physiological parameter, in this case temperature data, rate of eye blinking and frequency of heartbeat, and to make preliminary determination of whether the person is deceptive or non-deceptive based on the blood flow rate data obtained using the thermal image data, and thereafter, the computing apparatus is operable to confirm one preliminary determination by comparison to the other (see steps 7-15 described from line 5 of column 11 to line 8 of column 12).

With respect to claims 1, 2, and 4-10: The method steps recited in said claims will be performed during the normal operation of the system disclosed by Anbar.

With respect to claims 23 and 25-28: As discussed above, Anbar discloses a system for use as a lie detector/polygraph, which will perform, during its normal operation, the method steps recited in said claims.

4. Claims 30, 32-36 and 38-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Anbar.

Anbar discloses a system for use in monitoring blood flow rate/perfusion and further operable to determine a physiological state i.e., level of anxiety, of the person based on the blood flow rate information i.e., HST (see lines 37-62 of column 3 and lines 56-63 of column 4), the system comprising:

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A thermal infrared image device operable to provide thermal image data of at least a region of the face of a person (see step 1 described in column 13 and step 1 described in column 11); and a computing apparatus operable upon the thermal image data to transform the thermal image data to blood flow rate information i.e., HST (see lines 16-28 of column 4, step 2 described in lines 36-39 of column 13 and steps 1-11 described in columns 10-11).

With respect to claim 39: Said thermal infrared image device is operable to provide thermal image data of the face, inherently including regions proximate an eye of the person (see step 4 described in column 10 and step 2 described in column 13).

With respect to claim 40: Anbar also discloses said infrared thermal image device being operable to capture frames of thermal image data during at least a period of time, and further wherein the computing apparatus is further operable to track movement of at least the region of the face of the person during the period of time (as described in steps 2-4 described in column 11).

With respect to claims 30 and 32-36: As discussed above, the system disclosed by Anbar will perform, during its normal operation, the method steps recited in said claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 11 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anbar in view of Barnett et al. [hereinafter Barnett].

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Anbar discloses a system as claimed and which will perform the claimed methods during its normal operation, as stated above in paragraph 3.

The system disclosed by Anbar does not include invasive means for providing invasive measurement of said one or more physiological parameters different than blood flow rate but teaches that the conventional polygraph tests are based primarily on monitoring sudomotor activity by detecting a decrease in galvanic skin resistance.

Furthermore, Barnett shows a conventional lie detector system for detecting and recording physiological changes accompanying emotion stresses which includes various invasive means for measuring physiological parameters.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the computerized thermal imaging system disclosed by Anbar with a conventional polygraph system as that shown Barnett in order to compare and confirm the data thereby improving the accuracy of the results.

7. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anbar in view of Barnett.

Anbar discloses a system for monitoring blood flow rate and further for determining a physiological state of the person based on the blood flow rate information as claimed and which will perform the claimed methods during its normal operation, as stated above in paragraph 4.

The system disclosed by Anbar does not include invasive means for providing invasive measurement of said one or more physiological parameters different than blood flow rate but teaches that the conventional polygraph tests are based primarily on monitoring sudomotor activity by detecting a decrease in galvanic skin resistance.

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Furthermore, Barnett shows a system for detecting and recording physiological changes accompanying emotion stresses which includes various invasive means for measuring physiological parameters.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the computerized thermal imaging system disclosed by Anbar with a conventional system as that shown Barnett in order to compare and confirm the data thereby improving the accuracy of the results.

Allowable Subject Matter

8. Claims 3, 14, 24, 31 and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

Claims 3, 14, 24, 31 and 37 have been found to be allowable over the Prior Art of record because the Prior Art of record fails to teach or suggest a thermodynamic model for transforming thermal image data into blood flow rate data wherein blood flow rate is inversely proportional to the square of skin temperature deviation from a core temperature of a human body, in combination with the preceding limitations of the parent corresponding claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Stirbl et al. disclose a method and associated apparatus for remotely determining information as to a person's emotional state. Gordon et al. disclose a method of determining blood flow by measurement of temperature. Williams, Jr. et al. disclose an apparatus for

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measuring blood flow. Nilsson discloses a system and method for measurement and presentation of fluid flow movements, particularly the flow of blood flow through a body organ and a system for measuring fluid flow movements by a laser-Doppler technique. Shalom et al. disclose an instrument for locating and marking a hot spot in a person's body tissue. Meister discloses a method for determining the arterial blood pressure in a noninvasive manner.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lydia M. De Jesús whose telephone number is (703) 306-5982. The examiner can normally be reached on 12:30 to 8:00 p.m., Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.



Diego F.F. Gutierrez
Supervisory Patent Examiner
Technology Center 2800

LDJ
November 11, 2002